

Genomic surveillance of SARS-CoV-2 in Belgium

Report of the National Reference Laboratory (UZ Leuven & KU Leuven)

Situation update – 20 of July 2021
(report 2021_37)

Executive summary

33.578 Belgian sequences of SARS-CoV-2 are now publicly available on GISAID.

Among these, 1.191 sequences of positive SARS-CoV-2 samples collected between 5 and 18 July were reported in the context of baseline surveillance in the context of baseline surveillance,

- B.1.617.2 (*Delta*) represented 75,7% (compared to 62,6% in the last report) ↗
- B.1.1.7 (*Alpha*) represented 17,5% (compared to 28,1% in the last report) ↘
- P.1 (*Gamma*) represented 5,3% (compared to 6,3% in the last report) ↘

Other variants represent altogether less than 3% of the circulating strain.

Other points of attention:

- The NRC performed 295 VOC PCRs on unselected positive samples analyzed during the week of July 12. B.1.617.1/.2 represented 96% (↗) of the results.

- The increased number of infections diagnosed in Belgium is the result of increased testing AND an increasing number of symptomatic individuals. For the moment, this phenomenon mainly involves young (unvaccinated) age groups and the increase of hospitalisations remains limited. This situation may evolve as transmission in older age groups (mostly vaccinated, but with still an important number of unvaccinated and incompletely vaccinated individuals) will occur. Therefore, limiting further uncontrolled importation and spread of the virus should still remain considered as necessary at this stage, complementing the current vaccination efforts.

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Previous reports can be downloaded using the following link:

<https://www.uzleuven.be/nl/laboratoriumgeneeskunde/genomic-surveillance-sars-cov-2-belgium>

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1. International situation and observed impact of vaccination coverage

The Delta variant has become dominant in most parts of the world. As illustrated in Figure 1, in a country with a very low vaccination coverage (<5%, mostly partially vaccinated) like Namibia, the emergence of the Delta variant results in both more cases and more fatalities compared to the previous waves.

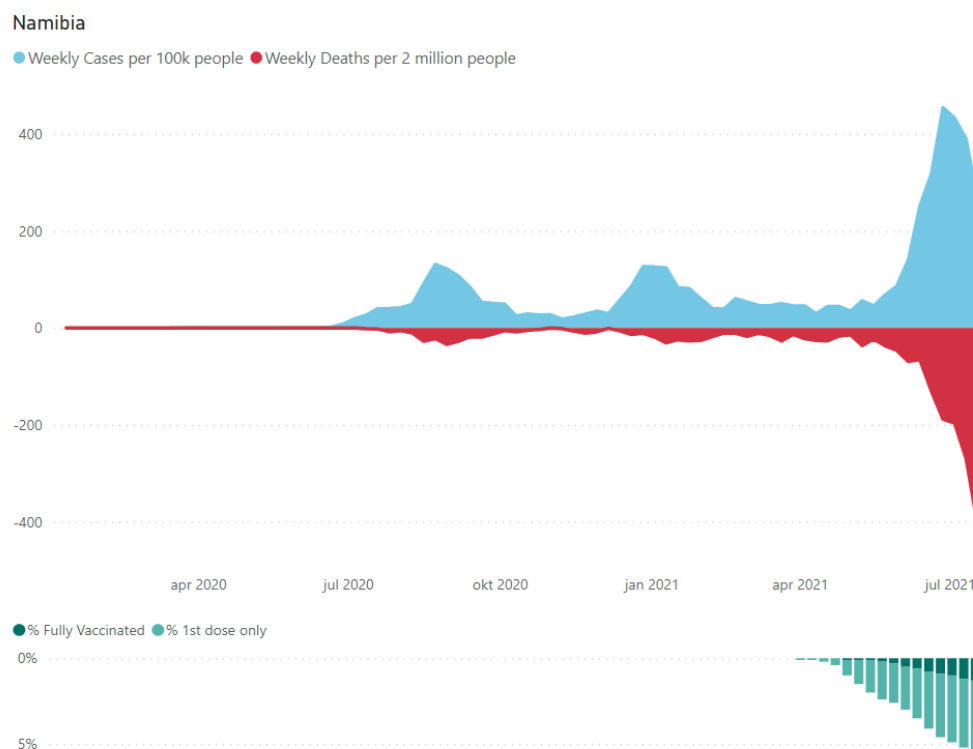


Figure 1: Namibia. Evolution of weekly COVID-19 cases (per 100.000 people) and deaths (per 2.000.000 people) in parallel with the rollout of vaccination ([source](#)).

In countries with an intermediate vaccination coverage such as Russia (20%, mostly fully vaccinated, Figure 2), the rise of infections was rapidly followed by a rise of deaths.

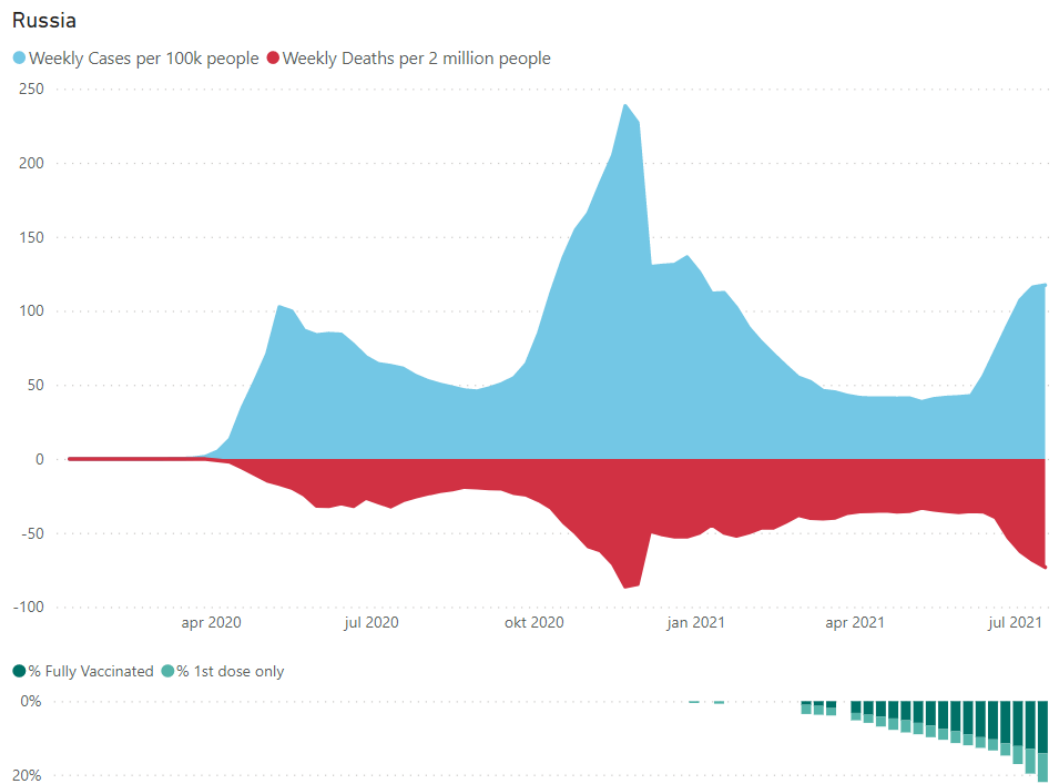


Figure 2: Russia. Evolution of weekly COVID-19 cases (per 100.000 people) and deaths (per 2.000.000 people) in parallel with the rollout of vaccination ([source](#)).

In countries with a high vaccination coverage such as the United Kingdom (>50%, mostly fully vaccinated, Figure 3), there has been a clear disruption between the number of infections reported and the number of deaths. This is currently the most probable scenario in most European countries, including Belgium. In the UK nevertheless, the very high and still increasing number of infections which is now observed for several weeks (with very little effort to contain transmission) inevitably translates into a rise of hospitalisations (Figure 4). This situation illustrates that effective and proportional disease control measures remain, at least at the present stage of the (UK) vaccination campaign, necessary to avoid an upsurge of new hospitalisations during an exponential rise of infections.

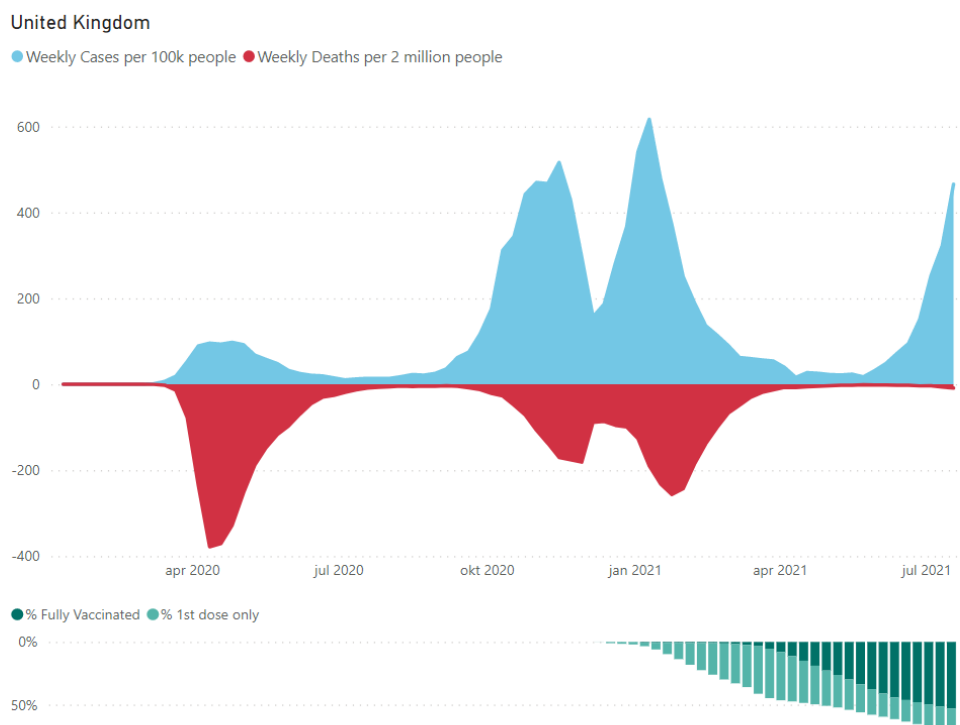


Figure 3: United Kingdom. Evolution of weekly COVID-19 cases (per 100.000 people) and deaths (per 2.000.000 people) in parallel with the rollout of vaccination ([source](#)).

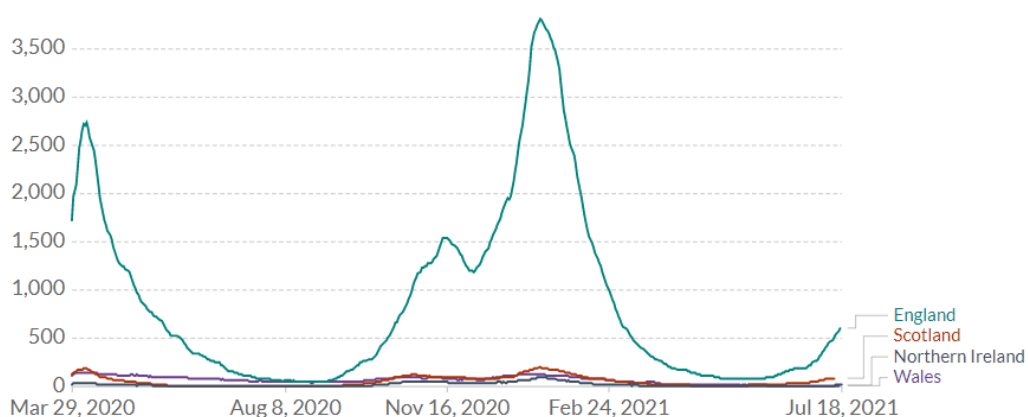


Figure 4: United Kingdom. Daily new hospital admissions for COVID-19 (source: Our World in Data).

2. Monitoring of VOCs in Belgium

While first identified on 6 April 2021 in Belgium, the B.1.617.2 Variant of Concern (Delta) is now the dominant lineage in the country.

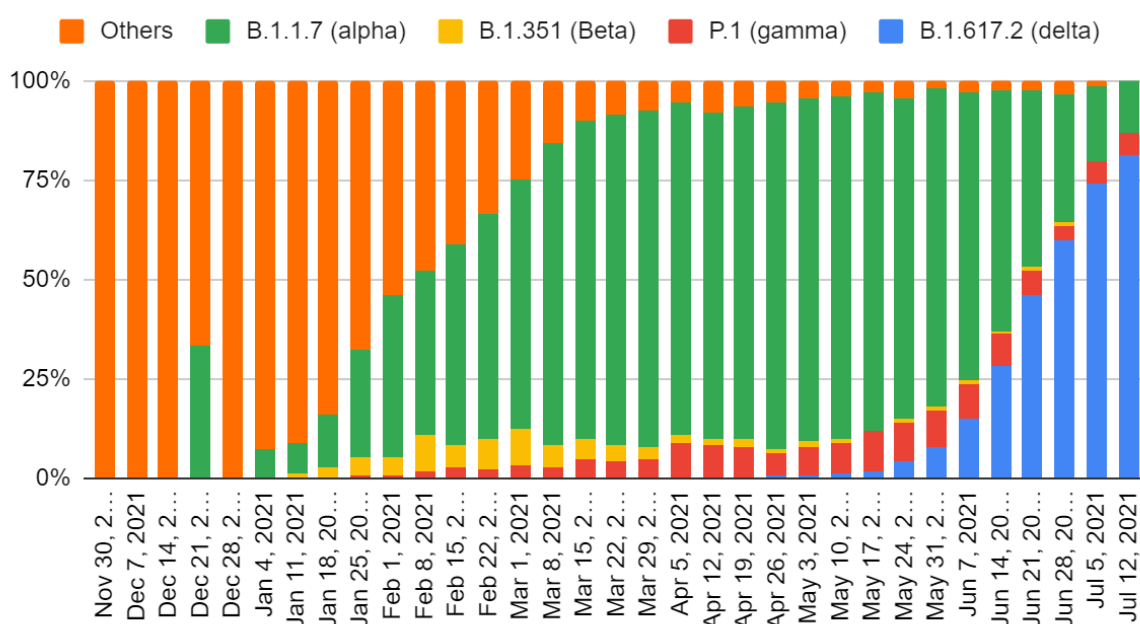


Figure 5: Weekly evolution of the frequency of variants of concern reported by the baseline surveillance network using a whole genome sequencing (WGS) approach.

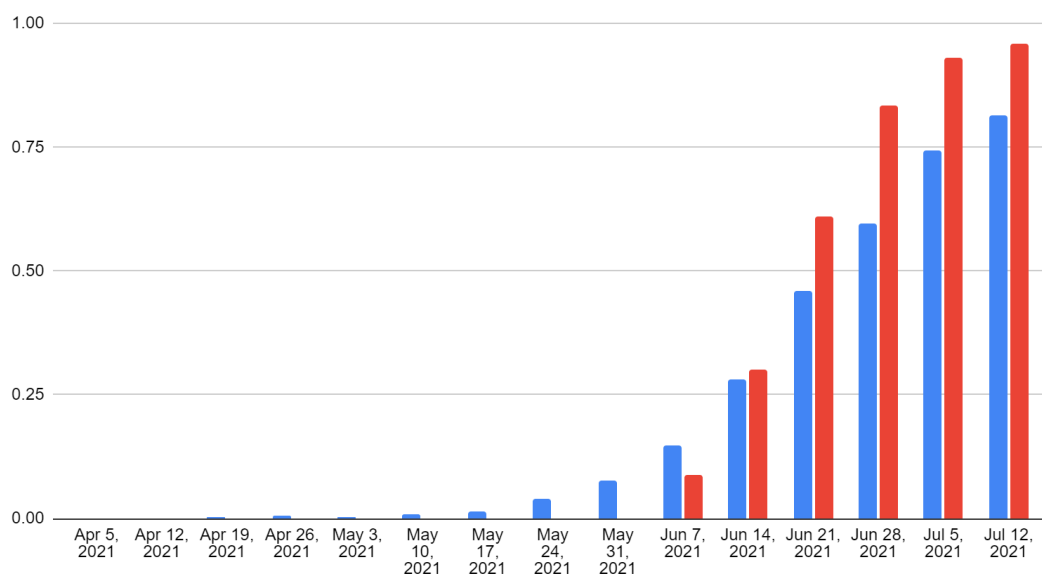


Figure 6: Weekly evolution of the proportion of the Delta variant reported by the baseline national surveillance network using whole genome sequencing (blue), and rapid VOC PCRs performed among all positive cases received at the national reference laboratory in Leuven (red: mainly unbiased sampling, but limited geographical representativeness).

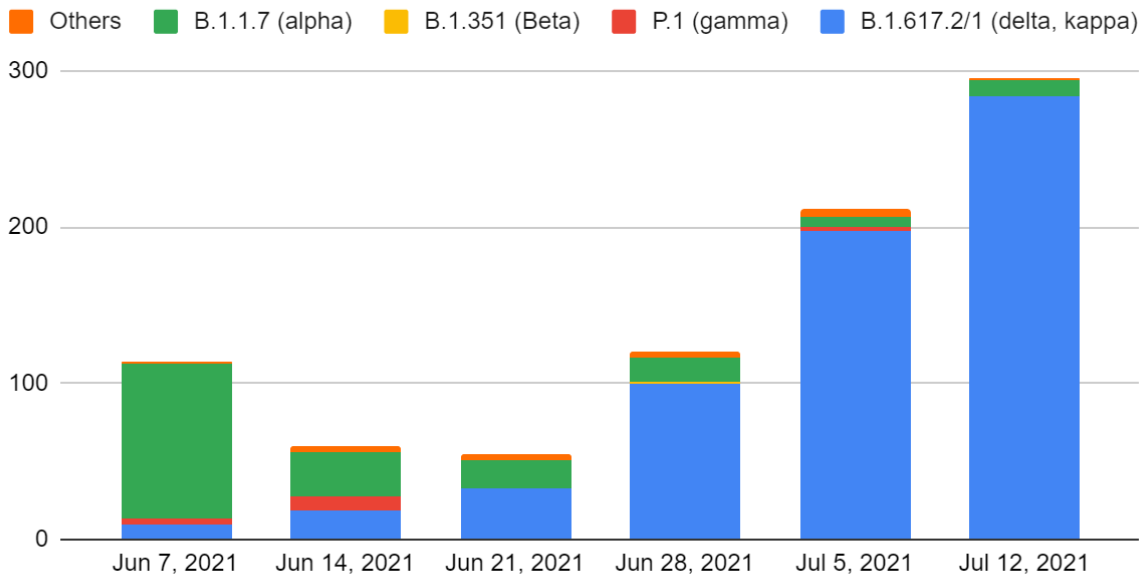


Figure 7: Weekly evolution of the number of variants of concern diagnosed at the national reference laboratory in Leuven (unbiased sampling, but limited geographical representativeness).

Lineage	Number of Belgian cases reported on GISAID	First reported
B.1.1.7 (Alpha)	20.615	30/11/2020
B.1.351 (Beta) and B.1.351.2	1.117	20/12/2020
P.1 (Gamma) and P.1.1	1.924	29/1/2021
B.1.617.2 (Delta)	1.699	6/4/2021
B.1.1.7 +S:E484K B.1.1.7 +S:S477R	49 36	31/3/2021 15/3/2021
B.1.214.2	717	3/1/2021
A.27	20	11/1/2021
B.1.427 (Epsilon)	1	18/1/2021
B.1.525 (Eta)	83	30/1/2021
P.2 (Zeta)	2	9/2/2021
B.1.526 (Iota)	2	24/2/2021
B.1.1.318	61	3/3/2021
C.36.3	29	23/3/2021
B.1.617.1 (Kappa)	17	25/3/2021
B.1.620	36	31/3/2021
C.37 (Lambda)	4	20/6/2021
P.3 (Theta)	3	27/6/2021
B.1.617.3	1	12/7/2021

Table 1: List of VOCs (red) and VOIs (orange) identified in Belgium to date and cumulative number of sequences available on GISAID (total of 33.578 sequences).

3. Testing of travellers

Departing travellers

During the last 3 full weeks (June 28 to July 18), the National Reference Center in Leuven has tested 25.096 departing travellers, among which 120 were tested positive. The positivity rate increased from 0,28% during the first week to 0,58% and 0,56% during the second and third week. The Delta variant represented 66% of the positive samples tested during the third week.

Returning travellers

For the last 3 full weeks (June 28 to July 18),

- Among the travellers returning from abroad to the region of Leuven, 389 people were tested, among which 16 were tested positive. The Delta variant represented 80% of the positive samples tested during the second week (positivity rate of 4%).
- Among the travellers returning from abroad through the Brussels South (Charleroi) airport, the federal platform laboratory of U Namur/Mont-Godinne reported 82 positive samples out of 1.423 tests performed (positivity rate of 5,8%). The positivity rate tends to increase week after week.

The situation in most European countries is rapidly deteriorating, at a higher pace compared to Belgium. The probability that returning travellers will remain at higher risk compared to the general population in Belgium constitutes the rationale for applying testing and quarantine to returning travellers from zones experiencing a rapid rise of cases or and/or a high incidence (Figure 8).

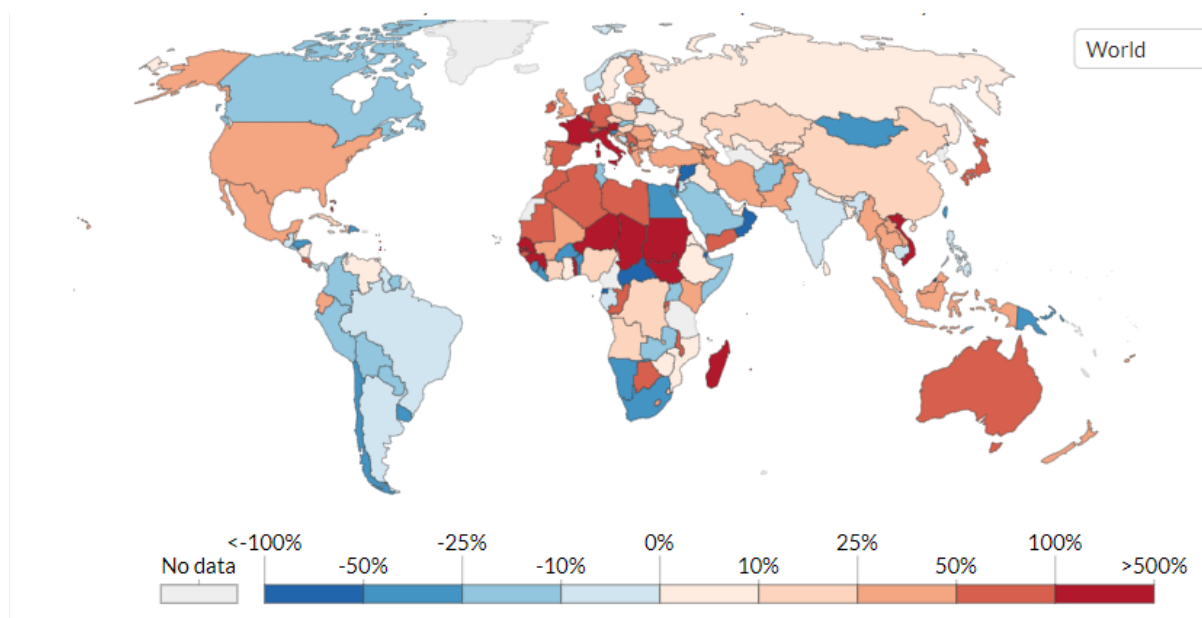


Figure 8: Weekly evolution of the number of confirmed COVID-19 cases, as reported according to the Johns Hopkins University (update 20/7).

4. B.1.1.318 in Greece in the context of suboptimal genomic surveillance

As mentioned in a previous report, Greece reported an atypical viral population shift in June 2021, with B.1.1.318 rapidly replacing Alpha (B.1.1.7) prior to the introduction of Delta (B.1.617.2). Since then, and for unclear reasons, Greece stopped sharing genomic surveillance data. It is therefore not clear if the current rapid rise of infections observed in Greece is due to the Delta variant or the B.1.1.318 variant. This uncertainty puts Belgium and other European countries sending tourists to Greece in an uncomfortable situation, as the presence of a highly infectious variant (which could be a competitor with regard to the Delta variant) could not be ruled-out at this stage (Figure 9).

When looking at the Belgian genomic surveillance, the B.1.1.318 variant was first identified on 22/2/2021 and the last sequence uploaded on GISAID is from 25/6/2021. In total, 61 sequences of B.1.1.318 have been reported from Belgium, and at the moment this variant does not show a visible competitive advantage compared to Alpha (B.1.1.7) or Delta (B.1.617.2) (Figure 10). It may thus be that the phenomenon observed in Greece would have been transient or artefactual (sampling bias, limited sequencing activity). Therefore, better and more recent surveillance data from this country currently receiving very high numbers of European tourists is needed.

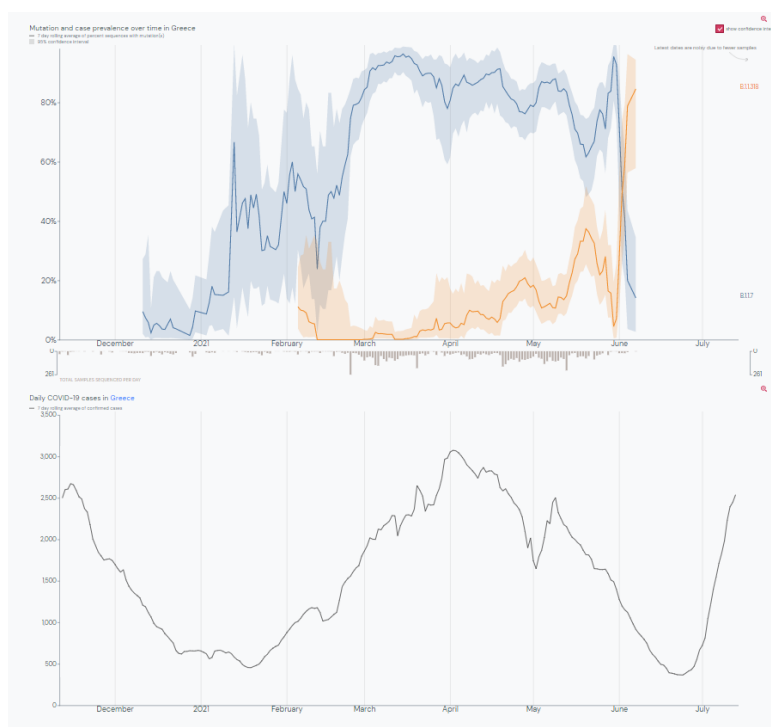


Figure 9: Evolution of viral populations and epidemiological situation in Greece.

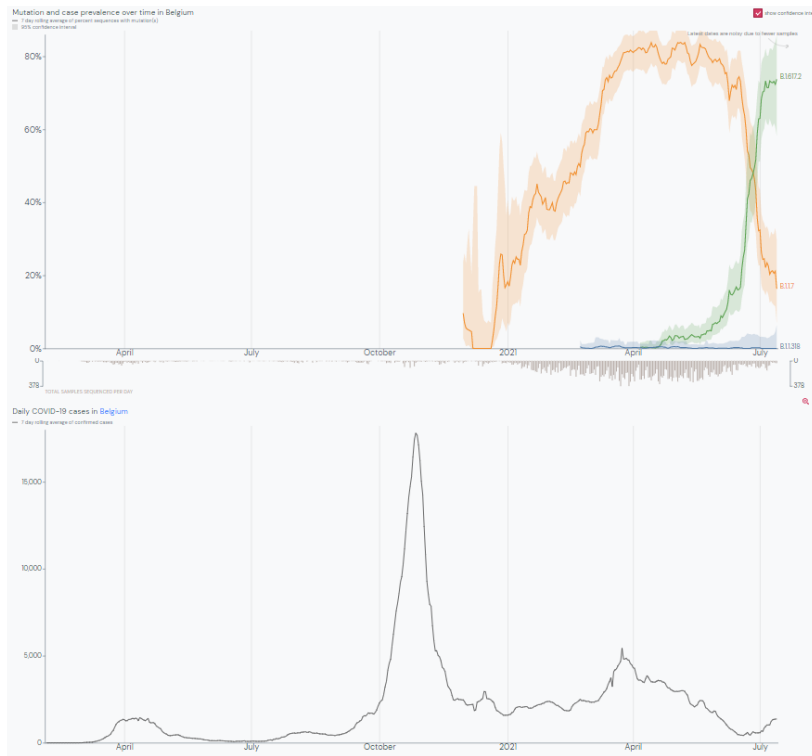


Figure 10: Evolution of viral populations and epidemiological situation in Belgium.